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Network orientation of Logistics Service Providers: the construct, dimensionality and measurement scale

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Abstract

Business orientation constructs have massively contributed to the scholarly understanding of firm-level conduct and performance heterogeneity. The business orientation debates, and thus empirical work, have focused on developing characterizations of a firm's propensity to engage a variety of behaviors, e.g., strategic, market, and entrepreneurship orientations. As such, each of these behavioral classifications has opened several empirical routes for comparative research and fine-grained analyses. While studies have made significant progress in the refinement of these constructs, there remains a lack of consensus regarding validity across contexts. There is a need for research to transcend the established notions of how managerial focus and firm performance has been typified. Therefore, this conceptual development study suggests that a similar orientation scale can be developed to depict the ways that organizations typically position themselves and how they choose to pursue opportunities that are embedded within their networked relationships. It synthesizes prior theoretical work to develop a network orientation construct; alongside various derived dimensions and operational indicators. To validate the model, the study tests the model using a sample of 305 respondents from the logistics service industry and a combination of exploratory and confirmatory factor analysis. Additionally, it examines the nomological validity of the network orientation construct and its impact on performance. The results supported the use of four out of five theoretically derived dimensions: structural network embeddedness, the interaction of indirect relations, interdependence within the network, and resources sharing. The findings also suggest that the network orientation construct has an indirect association with performance and the development of organizational capabilities.

Keywords: network orientation; strategic orientation; performance; organizational capabilities; logistics service providers

1. Introduction

In the modern market dynamics, it is increasingly evident that competitive success and performance often requires firms to engage in multi-faceted cooperation with other organizations (Powell, 1990; McEvily & Zaheer, 1999; Daugherty et al., 2009). A firm that is effective at managing the relational links with other organizations possess the potential to facilitate, mobilize, and unlock the transfer of knowledge and other resources (Adler & Kwon, 2002; Bellingkrodt & Wallenburg, 2013). In such a firm, actors are connected by various types of relationships to exchange information, ideas, and other forms of resources (Borgatti & Halgin, 2011).

The logistics service industry is a prime example of how networked relationships impact firm performance. Logistics service providers (LSPs) are multi-level communication structures and require a well-developed relational infrastructure to be effective. For instance, this service requires firms to assess and react to large volumes of information quickly to enable them to be effective in the coordination, planning, and reactive-based service decisions. Due to high information processing needs (e.g., transportation routes, distribution costs, customer/product variations, etc.) and the requirement for rapid decision making (e.g., unforeseen delays, human error, etc.), these firms cannot operate in isolation. They often rely upon their connections to carry out all services. This is particularly conspicuous in the case of transport, but also evident within distribution warehouses or reloading facilities (Gu et al., 2007), the coordination of third-party sub-contractors (Skjott-Larsen, 2000), the communication with customers (Hoffer, 2012; Gligor, 2014) and, in some cases, competitors (Raue & Wieland, 2015; Schmoltzi & Wallenburg, 2011). All are essential to creating comprehensive logistics services; thus emphasising that LSP value creation depends on their capability to interact with various networked actors.

Across a broad range of industries, network definitions emphasize the coordination of social interactions and the activities needed to increase performance (Elg, 2002). The importance of network perceptions and activities are in many previous studies on strategic

orientation. This is especially evident in LSP network research; which readily acknowledges the importance of supplier-buyer-supplier triads for performance (Wu et al., 2010), co-competition coordination in supplier networks (Pathak et al., 2014), the impacts of structural network characteristics (Bellamy et al., 2014) and the dynamic nature of relationships between the ordering entities (Gadde & Hulthén 2009). Furthermore, recent empirical studies have found that managers display a narrow perception of a network surroundings, which results in a limited understanding of opportunities embedded in networks (Czakon & Kawa, 2018). It is important to understand how networks of relationships influence firm conduct and performance (Gulati et al., 2000; Borgatti & Foster, 2003); especially within this context. While research has begun to explore this concept in more depth, there remain many opportunities to explore the network-centric variables and, subsequently, the performance heterogeneity explanations (Borgatti & Halgin, 2011).

The inclusion of these variables help clarify how a firm might learn, adapt, and leverage resources as a result of their perception of environmental contingencies (Anderson & Matsson, 2010), but more work is needed. The influence of the network on performance is a strategically relevant factor (Evanschitzky, 2007). A closer examination suggests that networks help firms to become more sensitive to customer demand (Elg, 2002), and thus create favorable conditions for effective creation of better value for customers (Evanschitzky, 2007). Scholars identify networking as a distinctive capability that alliance-oriented firms use and develop to identify partnering opportunities, coordinate inter-organizational activities, and learn from partners more efficiently than others (Kandemir et al., 2006). Interestingly, the dependent variable is not directly linked to the preference for collaborative and inclusive networks (Sorenson et al., 2008), or joint action (Elg, 2002). There is a need for research to transcend the notion that managerial focus is merely on opportunities embedded within markets and competitors but also related to the way they coordinate their networks of relationships. There is also a need to empirically examine the subsequent impact on firm's

performance. The literature provides numerous examples of industries in which networks are the source of success of enterprises. These are among others: the clothing industry (Uzzi 1996), the furniture production (Dyer & Singh 1998), the software industry (Kulmala & Uusi-Rauva 2005). There are, nevertheless, few studies that include an analysis of the inter-organizational networks in the logistics services industry (Selviaridis & Spring 2007). A lack of studies on the co-operation between LSPs and other actors in the network and its influence on performance is noticeable. several elements seem to be under-represented or missing.

Recently, network variables have been incorporated into the strategic orientation debates (Evanschitzky, 2007). The prominence of the strategic orientation construct(s) has been discussed and utilized across various management research domains for nearly 30 years (Deutscher et al., 2016). Initially, the business ‘orientation’ debates emerged as a response to evidence that firm-level behaviors exhibit some level of stability and strategic similarity over time regardless of variations in industrial categories; thus, reflecting a potential to categorize, measure, and refine decision-making and the subsequent influences on firm-level performance (Venkatraman, 1989). The orientation concept is useful in understanding firm-level conduct and performance heterogeneity (Deutscher et al., 2016) because it captures patterns of decision-making (Slater et al. 2006). However, despite the popularity and usefulness of this research stream to categorize firms’ and managers styles of opportunity evaluation (Shepherd et al. 2017), there remains a lack of consensus on the predictive validity of existing constructs.

This conceptual development study aims to examine the potential for understanding of firm performance through a network orientation lens. We develop a distinct network orientation construct through reflecting the focus on how logistics service providers deliver their service. Based on extant literature, we derive a network orientation definition, develop and validate a reliable measurement scale, which can be used, modified for future empirical research. In doing so, we utilize an accumulated conceptual development approach and empirical tests technique to bring about a multiplicity: 1) developmental; 2) best-choice; 3)

complementarity (Hakala, 2011). The developmental stream suggests a review of the orientations as they have evolved (Noble et al. 2002) and the multiplicity of the correlation and combinative potential of succeeding orientation literature (Hakala, 2011). Therefore, the literature review begins by elucidating the business orientation concept to understand how managerial behavioral incivilities have influenced firm-level performance. It is essential to review the theory-driven development of the strategic orientation (Venkatraman, 1989), market orientation (Narver & Slater, 1990), and entrepreneurial orientation (Lumpkin & Dess, 1996). A conceptualization of how network orientation and its associated dimensions might influence logistics firm performance is presented. It theorizes the multidimensionality of network metrics to understand how managers perceive and access relational resources (Håkansson & Snehota, 1989; Borgatti & Halgin, 2011). Our study then assesses the network orientation construct validity in the logistics service providers industry and provides evidence of its nomological validity by examining an indirect association to performance, through organizational capabilities.

2. Conceptual foundations

2.1. Business orientations

Generally, a firm's orientation is the generic inclusion of varying cognitive dimensions and the corresponding degree to which specific behavioral patterns manifest and characterized by organizational inclinations (Pearson, 1993). Therefore, each of the orientation debates reflects multidimensional variables (Rauch et al. 2009), and the behavioral preferences of managers that guide firm-level activity (Gatignon & Xuereb, 1997). Managerial perceptions and interpretations of the market environment are essential to achieving superior performance (Connor, 2007), and reflect firm-level principles and conduct (Hakala, 2011). These cognitive and actor level perceptions influence the identification and evaluation of potential

opportunities (Shepherd et al., 2017), the framing of strategic risks (Levinthal, 2011), and behavioral deviations from market efficiency (Gavetti, 2012).

Strategic orientations refer most often to the perception of the environment by managers and their reactions to environmental conditions (Sinkovics & Roath, 2004). The literature on this concept has enjoyed a sustained rise to recognition, increased complexity, and accumulated empirical tests. Over the years, scholars have expanded the strategic orientation construct by including new phenomena, determining strategic dispositions, and by introducing capabilities that mediate between orientations and performance (Theodosiou et al., 2012). According to Sinkovics and Roath (2004), the strategic orientation positively impacts performance when leveraged by operational flexibility and collaboration capabilities in the manufacturer – LSPs relations.

The identification of strategic orientation is highly influential in defining the measurement techniques of the ‘orientation’ constructs (Venkatraman, 1989). A wide variety of strategies deployed by firms have become evident and can now be defined into fine-grained distinctive orientations, assessed along orientation’s dimensions, and subsequently compared for variations within the performance outcome (Morgan & Strong, 2003). Initially, the strategic orientation construct was crafted to include six dimensions: analysis, defensiveness, futurity, aggressiveness, proactiveness, riskiness (Venkatraman, 1989). However, further work began to delineate the applicability of the construct across contexts with varying results. For instance, studies reflected variations along the dimensions and if they had a direct or indirect effect on performance. One such study suggested that there were direct links to performance through some constructs (analysis, defensiveness, futurity), while others are not (aggressiveness, proactiveness, riskiness) (Morgan & Strong, 2003).

Evidence from other empirical studies suggests that strategic orientations are not a stand-alone explanatory variable but play a nuanced role in explaining forms of context-specific advantage (Scott-Kennel & Giroud, 2015). For instance, one study revealed that

strategic orientations moderate the relationship between open innovation and innovation performance, as firms having a more explicit strategic orientations display higher effectiveness when engaged in such endeavours (Cheng & Huizingh, 2014). Similarly, it has been found to reinforce the strategic momentum of firms, that is depending on their will to adapt or uphold their business models when confronted with perceived external challenges (Saebi et al., 2017). Despite the usefulness of the orientation constructs, especially in explaining performance heterogeneity, several recent studies point out that several more nuanced variables need to be included to capture firms' behaviors; e.g., network knowledge (Scott-Kennel & Giroud, 2015), supply base (Ziggers & Henseler, 2016), indirect supply network relationships (Kim, 2014; Lu & Shang, 2017), network positions (Soda et al., 2018).

While distinct in focus and approach, the concepts of strategic and market orientation are often used interchangeably within the literature (Gatignon & Xuereb, 1997; Voss & Voss, 2000). Strategic orientations are “guiding principles that influence a firm's marketing and strategy making activities” (Noble et al., 2002: 25). However, the underlying logic of the market orientation construct diverges slightly and focuses directly on how value is created for the customer (Kumar et al., 2011). Market orientation detects actors relevant to the creation of value (e.g., customers and competitors) and the mechanisms needed to best respond to the corresponding expectations and challenges (Thornton, 2011; Fugate et al. 2008).

Conceptually, the market orientation construct encompasses behavioral components that are relevant to the organizational capabilities, and that are needed to integrate and manage relationships with external actors. It emphasizes the cognitive components which are needed to be translated into management systems, processes, resource endowments, and ultimately organizational capabilities, which in turn foster performance (Morgan et al., 2009).

The market orientation construct has been crucial to the development of the organizational capabilities understanding, and successive work has examined the inclusion of various dimensions and associated performance expectations (Narver & Slater, 1990; 2000). It

posits that the more that firms understand the demands and changes within their customers and buyers' expectation, the more likely they are to achieve successful transitions within the value chain and respond with appropriate offerings. Additionally, the better they may understand their competitors' capabilities and strategies, as well as the current competitive dynamics, the more likely they are to adopt effective market responses. Finally, the more firms develop organizational routines and capabilities to leverage the gathered intelligence effectively, the more likely they will be able to adapt resources and behaviors to the emerging external contingencies (Huo et al., 2014). Much like the work encompassing strategic orientation, the market orientation emphasizes the importance of stable behavioral components for creating value, such as an intelligence-gathering system (Kohli & Jaworski, 1990), or culture (Becker & Homburg, 1999).

Empirical studies have primarily demonstrated a positive association of market orientation to performance (Gilgor 2014), typically measured by return on assets, relative product quality, new product success, and sales growth (Morgan et al., 2009), with more nuanced results reflecting explanations by industry-level, firm-level, and product-level factors (Voss & Voss, 2000). However, further examinations have revealed that each dimension might have a varying impact on performance, with some studies suggesting that only competitor orientation is significantly related to performance (Noble et al., 2002). The simple theorization of market orientation, as a behavioral proclivity, directly enhances performance, has been increasingly seen as indirectly linked to performance through various processes and capabilities. As such, studies have begun to associate external networks and the ability to capture new knowledge as intervening variables in the relationship between market orientation and new service development (Ordanini & Maglio, 2009). Additionally, the market orientation construct has been found to support the effect of absorptive capacity of organizations on the firm's performance and innovation processes (Rakthin et al., 2016).

The value network concept specifies several types of actors and possible relationships among them (Brandenburger & Nalebuff, 1996). Like the market orientation work, relationships in the value network may involve collaboration, competition, and co-opetition when the same actors both collaborate and compete for the value created (Bengtsson & Kock, 2000). Relevant actors include customers and competitors (Sinkovics & Roath, 2004), as identified in the market orientation construct (Narver & Slater, 1990), but also suppliers (Pathak et al., 2014), and complementors (Brandenburger & Nalebuff, 1996), whose services add to the final value offering.

The entrepreneurship field has followed a similar path to strategy and marketing in identifying, measuring, and examining the impact of entrepreneurial orientation dimensions on performance (Lumpkin & Dess, 1996). The sets of dimensions used in empirical studies involve: innovation, proactiveness, and risk-taking (Wiklund, 1999), but has also incorporated autonomy and competitive aggressiveness (Coulthard, 2007). Available meta-analyses indicate that the general effect of entrepreneurial orientation on financial and non-financial performance is positive and moderately large (Rauch et al. 2009). The empirical evidence suggests that this positive effect is also sustainable over time (Wiklund, 1999). However, many variables, such as environment dynamics or access to capital, intervene in this relationship (Wiklund & Shepherd, 2005), bringing a more nuanced picture of the entrepreneurship orientation association with performance.

While the current work on strategic orientations has significantly advanced our understanding of how behavioral nuances and managerial perceptions influence the performance expectations of firms, there remains a lack of consensus on the influence of specific dimensions and the inclusion of moderating variables. For instance, recent studies explore the moderation effect of strategic alliances (Brouthers et al., 2015), or knowledge-related processes (Jiang et al., 2016). We focus our study on one such phenomenon, which is the recognition of the firm's interdependence with multiple partners (Boso et al., 2013) or

networks (Borgatti & Halgin, 2011). If the ‘orientations’ are principles that guide decisions, impact activities and produce behaviors intended to achieve superior performance (Hakala, 2011), then orienting towards networks increases the sensitivity to market demands (Elg, 2002) can help in identifying issues and opportunities in networks (Sorenson et al. 2008), facilitate exchange resources (Evanschitzky, 2007), and develop distinctive capabilities (Kandemir et al., 2006). In the next section, we develop the concept of network orientation through reviewing the extant network literature and pre-define the network orientation dimensions *a priori*.

2.2. Network orientation: derivation and definition

Similarly to the business orientations constructs that illuminate the complexity of strategy, market, or entrepreneurship concepts, the network orientation is likely to exhibit similar multidimensionality. This study follows the *a priori* approach to develop the dimensionality of the construct (Venkatraman, 1989; Narver & Slater, 1990; Lumpkin & Dess, 1993). This is to pre-specify the dimensions based on the theoretical perspectives on the network concept and empirically validate it in order to confirm or reject the theoretically derived dimensions. Furthermore, through constructs are tested in nomological validation procedures. In order to develop the network orientation construct, this paper provides an overview of prior constructs that refer to firms’ orientations towards networks to identify relevant attributes proposed in prior conceptual works. Secondly, we outline relevant dimensions of the network concept that provide a theoretical trail to dimensionalizing the network orientation construct. Consequently, we pre-define its five dimensions.

Prior literature addresses firms’ orientation towards networks, specifically by locating the construct at a collective level of analysis or expanding the original scope of market orientation. For instance, the inter-firm market orientation refers to “the activities that two or more independent companies carry out together to make a network or an individual relationship more sensitive to the demands of the market” (Elg, 2002: 634). Those activities

are focused on gathering information on collective level of analysis, and how firms disseminate knowledge and jointly responding to identified market needs (Kohli & Jaworski, 1990). A more recent conceptual take on network orientation further develops this line of reasoning by referring to “how actors perceive and make sense of the network structures and processes in which they are embedded” (Andersson & Mattsson, 2010: 920). We retain the fundamental premise that structural characteristics (Koka & Prescott, 2008) and relational attributes of networks (Lechner et al, 2006) are essential to determine the degree of network orientation.

Another construct is the work on networked market orientation (Evanschitzky, 2007), which expands the original scope of market orientation (Narver & Slater, 1990). Again, this level of analysis is collective and refers to an “organizational culture that creates the necessary conditions for efficient and effective creation of superior customer value, through an exchange of resources in a network of partners” (Evanschitzky, 2007: 354). This work emphasizes that extending knowledge and resource flows are an essential. This is like the collaborative network orientation (Sorenson et al., 2008), which reflects how individuals organize through addressing the degree of preference towards collaboration, joint action, and inclusivity of networks. Thus, the mutual interdependence of actors within networks is recognized, along with superior access to resources as compared to those actors who refrain from engaging in networks. Recent empirical research unveils that alliance orientation has a positive and additive effect on performance (Wilson et al. 2014), and that alliance orientation, when coupled with network size, helps firms to learn from others (Bouncken & Fredrich, 2016).

The previous work on inter-firm market orientation (Elg, 2002), network market orientation (Evanschitzky, 2007), collaborative network orientation (Sorenson et al., 2008), and alliance orientation (Bouncken & Fredrich, 2016) seem to converge to a single conceptual framework (fig. 1) wherein an orientation towards networks contributes to developing

distinctive firm capabilities and increase performance (Theodosiou et al., 2012). This framework is useful in nomological tests of the network orientation construct, as it assesses the degree to which the focal construct relates to other theoretically connected constructs (Gatignon et al. 2002; Daneels (2016). In particular, it can be expected that a positive relation between each of the network orientation construct dimensions with organizational capabilities, and subsequently with organizational performance, may occur.

----- INSERT FIGURE 1 ABOUT HERE -----

Dimensions of firms' network orientations stemming from constructs proposed in the literature include: structural and relational attributes of networks (Andersson & Mattson, 2010), knowledge and resource flows (Evanschitzky, 2007), and mutual interdependence (Sorenson et al. 2008). Prior work has emphasised the need for a refined and typological view of network orientation and its dimensions, but remains fragmented. Accordingly, we respond to the need for a further conceptualization of a network orientation construct.

The network model of the firm-environment interface includes a limited population of actors involved in recurrent exchange relationships (Håkansson & Snehota, 1989). The actors embedded within these networks develop a complex set of interdependencies, with direct influence on the individual performance of the firm and indirect collective performance of the network. In line with the behavioral approach to strategy (Levinthal, 2011), different perceptions of networks, and subsequently different orientations at network embedded opportunities and related organizational capabilities can explain performance heterogeneity of firms. In doing so, understanding networks is essential for a firm to fit with its environment, in adapting to operational requirements, and strategic challenges (Pillai, 2006). We define network orientation as a focus on opportunities embedded in networks in order to achieve superior performance. Consequently, we posit five critical dimensions of the network orientation construct: structural network embeddedness (Choi & Kim, 2008), the

interdependence of firms (Dubois et al., 2004), the interaction of indirect relationships (Gadde & Hulthén, 2009), resources sharing (Håkansson & Ford, 2002), exchange within the network (Romano, 2003).

2.3. Network orientation dimensions

Structural network embeddedness refers to the relational configuration between network actors and how they interact (Gulati & Gargiulo, 1999). It is composed of structural features that describe the density (Delbufalo, 2015), proximity (Oerlemans & Meeus, 2005), reciprocity (Wang et al., 2013), and strength (Golicic et al., 2003) of observed interactions within a network. Research suggests that dense networks foster information diffusion, knowledge acquisition, and offer privileged information access (Gnyawali & Madhavan, 2001). Therefore, some researchers argue that dense networks offer higher chances of responding to complex environmental challenges (Delbufalo, 2015). Proximity refers to the distance, relatedness, or similarity of actors and is often associated as a core factor for ensuring cooperation (Golicic et al., 2003). Reciprocity is associated with the prevalence of mutual benefit and attempts to describe the conditions to form, alter, or discontinue relational links (Ring & Van de Ven, 1994). Additionally, as relationships develop, the increased commitment and trust between actors are important mediating variables in active cooperation (Morgan & Hunt, 1994).

The interdependence of firms within the network refers to mutual dependence in terms of organizational capabilities, resource access, coordinated actions (Adner & Kapoor, 2010) of relevant actors in a firm's network (Håkansson & Ford, 2002). Mutual dependence offers a source of influence on other firms (Wang et al. 2013) and requires managers to carefully balance interdependence among firms (Anderson et al., 2009). Logistics companies try to balance dependence on other firms based on the degree of uncertainty in the environment. Empirical studies suggest that the appropriate balancing of dependence in inter-firm

relationships benefits the development of organizational capabilities and contributes to superior value creation (Cova & Salle, 2008).

Interaction of indirect relationships refers to the dependence of given business performance on how well the interdependent business partners interact with their broader network of partners (Håkansson & Snehota, 1989). Empirical studies suggest that indirect relationships link the dyadic level of analysis with the network level (Wilhelm, 2011), and are beneficial for performance (Obstfeld, 2005). A predominant proportion of inter-firm network activities are indirect (Axelsson & Håkansson, 2016). Such relations have a powerful impact on logistics companies, as enterprises cannot effectively operate without further market players. Therefore, cooperation with a supplier's or peripheral customer networks might offer opportunities for value creation and better coordination among actors embedded within the core dyadic and networked exchange. Given that indirect relationships are essential for the success of LSPs, they should not be seen exclusively as unknown environmental factors, as is the case with traditional strategic management models.

Resources sharing refers to additional opportunities' firms may grasp when identifying and accessing the resources available in their network surroundings (Gulati, 1999). Networks provide information about resources held by other firms in the supply chain (Gilgor 2014; Ramayah & Omar, 2010), and create privileged access to these resources, thus contributing to achieving competitive advantage (Borgatti & Halgin, 2011). Firms differ in their capacity to identify resources location, control their flow, which results in varying levels of motivation and ability to act in networks (Gnyawali & Madhavan, 2001). By actively participating in inter-firm networks, firms can also exploit their resources more efficiently (Liu et al., 2015). In sum, networked logistics firms outperform other organizations because of specialized asset ownership and using partners' resources. It requires less capital and achieves higher profitability (Chapman et al., 2002).

Exchange within the network is essential for achieving competitive advantage (Gulati et al. 2000). It refers to the ability for information exchange to occur within a network and sparks a focused flow of resources (Borgatti & Halgin, 2011), thereby enhancing coordination and increasing performance (Wu et al., 2010). It stands in comparison to information acquisition from unconnected market actors (Ramayah & Omar, 2010). For these reasons, LSPs invest in information technologies that improve collecting, processing, analyzing, and transferring information about resources and the processes within the supply chain. Nuanced empirical results suggest that strategic orientations first contribute to the development of distinctive capabilities (Coulthard, 2007), which in turn impact the firm's performance (Theodosiou et al., 2012). In order to effectively drive performance, firms must develop the distinctive capabilities needed to manage inter-firm relationships throughout their life-cycle (Morgan et al., 2009; Mitreğa et al., 2012). These capabilities encompass exchange within various organizational systems and dedicated procedures to enhance the creation and execution of strategies within a networked environment (Morgan & Strong, 2003).

3. Research design

This study adopted a similar stance to the previous conceptual development studies on business orientation and employed a literature-driven formation of relevant dimensions (Venkatraman, 1989). In doing so, an initial inventory of multiple items to measure each dimension followed the conventional procedures of scale development (Churchill, 1979). The literature review produced 38 items for seven constructs: five related to network orientation and two associated with superior performance indirectly and through organizational capabilities (Gerbing & Anderson, 1988). Following several rounds of discussion and reflection, the authors agreed on the content validity of the scale (Hoskinsson et al., 1993).

The face validity of the scale was assessed by external experts (Hardesty & Bearden, 2004). Following the approach suggested by Nunnally (1978), 14 external respondents were

asked to evaluate, select, and purify the elements of the measurement scale. These were representatives of the logistics services industry, experts, and researchers investigating inter-organizational networks and logistics. Their comments were examined and incorporated into the measurement tool. As some measures appeared redundant following this process, only 31 of the 38 items initially generated for the constructs were retained.

The study then assessed the construct validity (Bagozzi et al., 1991) on a sample of 305 Polish logistics service managers. Through exploratory factor analysis, indicators with the highest factor loadings were identified. This process helped to reduce the complexity of the measurement scale and to obtain a better statistical adjustment of the factors. The reliability analysis by the Cronbach's alpha was completed with the AVE indicator. The AMOS software was run for convergent and discriminant validity tests, through confirmatory factor analysis, and to assess the quality of the measurement model. A nomological validity assessment, using structural equation modeling on the proposed conceptual framework (fig. 1), tested a theoretical prediction that (1) increasing network orientation improves organizational capabilities, and (2) through improved organizational capabilities, a logistics firm's performance increases.

3.1. Measures

For business orientation research (Voss & Voss, 2000), perceptual measures of the dependent variables are used. Our measurement scale consisted of 31 statements with a 5-point Likert scale. Managers were asked to benchmark their organizational capabilities and performance, using a 5-point scale. Ratings from 1 to 5 corresponded to "definitely disagree" for 1, and 5 "strongly agree." (table 1).

3.2. Data collection

The data sample selected for this study were logistics service providers (Wallenburg, 2011). In framing the study, the decision to focus on a single industry sample aided in the minimization of noise, both systematic and random, that often are attributed to variations in

industrial contexts (Voss & Voss, 2000). The logistics service industry was selected due to the nature and large volume of embedded inter-firm relations they typically possess (Czakoń & Kawa, 2018). These relations can be characterized by both vertical (relationships with suppliers, the suppliers' suppliers, customers, and the customers' customers) and horizontal (cooperation with other logistics companies and complementors). Thus, this context provides a compelling backdrop for assessing network orientation.

The Eurostat database was used in generating a random sample of logistics firms within Poland. The full population consists of about 92 thousand firms (Eurostat, 2016). The survey was sent via e-mail to 9 thousand respondents between May and July 2015. Using CAWI, 316 completed surveys were collected. It was necessary to reject 11 of them due to errors or incomplete answers. Three hundred five questionnaires were used, with a 5.6% acceptable measurement error at a 0.95% confidence level (Światowiec-Szczepańska & Kawa, 2015).

4. Results

The content of the questionnaire statements (items) and the relevant codes assigned to them are presented in table 1. The reliability tests of our measurement scale are positive, as Cronbach's alpha of all the variables exceeds 0.8, while AVE was higher than 50%, which indicated good scaling adjustment.

----- INSERT TABLE 1 ABOUT HERE -----

4.1. Construct validity assessment

The evaluation of discriminant validity revealed that the dimension “exchange within the network” was problematic, in that it exhibited high levels of correlation with another dimension – “interdependence of firms within the network”. The discriminant validity test was used to verify the similarity of these two dimensions. Consistently with the structural

equation modeling procedure (Hair et al. 2010), established steps in developing a business orientation construct in terms of confirming or rejecting theoretically derived dimensions (Venkatraman, 1989) and discriminant validity assessment procedures (Denneels, 2016) the dimension “exchange within the network” was removed. The model was modified, and removing the dimension “exchange within the network” yielded the best results. The modified model maintained the underlying assumptions behind the network orientation model.

The issue with the dimension “exchange within the network” and, consequently, removal of this dimension from the model may be explained by scope of similarity with the „structural network embeddedness” dimension, and can therefore, be considered by managers a necessary condition for the proper functioning of the network relations of logistics companies (Skjoett-Larsen 2000). In the opinion of managers, the intensity of the material, information and energy exchange within the network is not a component of network orientation.

Consequently, the rectified measurement model consists of 18 indicators that covered four dimensions of network orientation in the logistics service industry. Additionally, the survey measured two dependent constructs, that is organizational capabilities (6 items) and performance (4 items).

Validity estimations of the structural equation models were used, and satisfactory levels were obtained for all values (Iacobucci, 2010). The standardized χ^2 (χ^2/ss) was 1.17 and was below the maximum value of 5. RMSEA was 0.04, translating into a proper adjustment of the model (McDonald, Ho, 2002). GFI and AGFI were respectively 0.9 and 0.84, which was slightly below the limit of a well-matched model (0.9). The incremental indexes values also supported a strong match of the model to the data. The IFI, as well as the TLI and the CFI, were well above the minimum value of 0.9 (Hooper et al., 2008), i.e., 0.98.

Convergent and discriminant validity were also assessed. First, the factor loadings values were calculated and checked for statistical significance. All the items were statistically

significant in terms of their relation to constructs and the intended to measure. The AVE and CR measures were calculated to test the consistency of the items measuring the network orientation dimensions. The AVE value of each construct exceeded the limit of 50%, and the CR was well above 0.7. Thus, all constructs and respective measurement items yielded positive results of the convergent validity test.

Discriminant validity was assessed in two different ways. First, the statistical significance of the change of χ^2 and df (degrees of freedom) number was checked and showed a consistent correlation between the two latent constructs at the level of 1. This procedure was repeated for each pair of variables with moderate and high correlation coefficients, i.e., at least 0.4. All the changes were statistically significant and reflected that the network orientation dimensions were distinct from each other. Second, the AVE values of the individual pairs of dimensions were compared with squared correlations. The AVE values of all dimensions were more significant than the corresponding squared correlation (Table 2). Both stages of the discriminant validity testing were positive.

----- INSERT TABLE 2 ABOUT HERE -----

4.2. Nomological validity assessment

Four of the five hypothesized correlations are statistically significant (Table 3). There was a positive and statistically significant association of (1) structural network embeddedness, (2) indirect relations, and (3) interdependence, with organizational capabilities. Although sharing resources had a positive association with organizational capabilities, this correlation was not statistically significant. The association of organizational capabilities with the performance was moderately active and statistically significant. The results suggest that network orientation composed of four dimensions was positively associated with superior performance indirectly through the organizational capabilities of LSPs.

----- INSERT TABLE 3 ABOUT HERE -----

The standardized χ^2 of the modified model was 1.24, while the RMSEA was 0.05. The GFI and AGFI were at a satisfactory level, with 0.89 and 0.83 respectively. The incremental fit indexes (IFI, TLI, CFI) were above 0.97.

5. Discussion

5.1. Network orientation construct

Our study reveals that managers of logistics service providers tend to perceive four dimensions of network orientation, limiting the set of five dimensions identified during the literature search. In doing so, there was strong empirical support exhibited in the validity tests and confirmation that the construct of network orientation is multidimensional.

Four distinctive dimensions were identified in this process (1) structural network embeddedness, (2) resources sharing, (3) interaction of indirect relationships, and (4) interdependence of firms within their network. Interestingly, managers perceived the “exchange within networks” dimension to be overlapping with others, and unclear, as the discriminant validity test implies. The study did not find enough empirical support for the fifth dimension for inclusion in the final model.

The literature points to the active role of resources sharing in influencing the success of an enterprise (Liu et al. 2015). However, surveys among managers of logistics companies lead to different conclusions. Giving access to and using the resources of other actors of inter-organizational networks has no significant impact on their organizational capabilities. The studied relationship is statistically insignificant, and the correlation is weak (0.09; $p > 0.1$). The research carried out shows that the added value resulting from the exchange of resources in networks (Baraldi, Gressetvold, Harrison, 2012) does not manifest itself in the form of the organizational capabilities of LSPs. It is possible that this impact is more pronounced in terms of the entire network in the logistics services industry and not in terms of the individual

entities representing it. The network resources, which are the resources of the inter-organizational network, are particularly interesting here. They can have an impact on the advantage and performance of the network as a whole, not on the specific actors. However, this assumption requires further research to be conducted from a multi-level perspective.

The “resources sharing” dimension revealed an association with the “structural network embeddedness” dimension, rather than directly contributing to organizational capabilities. The results of the structural network embeddedness dimension (0.27; $p < 0.05$) reveals supports for prior claims that strategic orientations must be conjointly developed with organizational capabilities (Morgan et al., 2009). The evidence supports views that logistics firms use both the structure and content of network relationships to carve organizational capabilities (Lei & Huang, 2014). Managers perceive close, multiple, strong, and reciprocal relationships as necessary for organizational capabilities. It can be said that the more managers recognize their firms as embedded in networks, the more likely organizational capabilities are to improve. A focused adaptation to specific actors in the firm’s network surroundings seems important (Håkansson & Snehota, 1989), as it facilitates successful response to competitive dynamics, and the development of active patterns of action (Morgan & Strong, 2003).

Furthermore, the interaction of indirect relations is positively associated with organizational capabilities (0.17; $p < 0.05$). The more managers of LSPs recognize indirect relationships as necessary, the more organizational capabilities are likely to develop. By understanding indirect relationships, firms may effectively work with their suppliers’ suppliers (Kim, 2014) and customers’ customers (Skjoett-Larsen, 2000). While prior literature suggested that indirect relationships are likely to impact a firm’s performance (Håkansson & Snehota, 1989), the results offer a more fine-grained view by focusing the attention of the association that managers develop between indirect relationships recognition and strengthening organizational capabilities.

Moreover, this study suggests that the more managers appreciate the interdependence of firms, the more likely the firms are to strengthen organizational capabilities (0.27; $p < 0.05$). Extant network research indicates that one significant benefit of conscious operations within networks is improved adaptation both operationally and strategically (Pillai, 2006). Recognizing interdependence helps collectively respond to common challenges both because of enhanced shared understanding and because of improved coordination (Elg, 2002). Interestingly, interdependence contributes to strengthening individual firms thanks to their collective actions. We provide a substantial sample test of those prior claims and link this network orientation dimension to relevant organizational capabilities.

Contrary to theoretical claims, the resources sharing dimension association with organizational capabilities appears to be weak and statistically insignificant (0.09; $p > 0.1$) in the logistics service industry. Prior literature mentions that effective resources sharing within networks influences the performance of firms (Liu et al., 2015). However, our detailed insight into resources sharing connection with organizational capabilities shows that this dimension is associated with structural network embeddedness, and in turn, with enhanced organizational capabilities. Thus, we advance the literature by identifying the following relationship rather than a direct one.

5.2. Network orientation and firm-level outcomes

To examine the effect of network orientation on organizational performance, we estimated models of performance as a function of enhanced organizational capabilities and refined the dimensionality of a network orientation construct in the logistics service industry. These findings aided in the development of a useful and new construct to help convey perceptions of network orientation (Cronbach & Meehl, 1955), and in linking explanatory variables to relevant dependent variables in the form of testable hypotheses.

The development of the network orientation construct, its measurement scale, and corresponding validation contributes to the literature by providing a sample test of the relationship to firm performance (Theodosiou et al., 2012). The results suggest that network orientation contributes to increasing the performance of logistics service providers, but not in a straightforward way. This study hypothesized that increased network orientation is behavioral antecedent of enhanced organizational capabilities, which are likely to increase performance. The analyses support perceptions that the development of distinctive capabilities can allow firms to purposefully implement capabilities to create superior performance (Levinthal, 2011). These results have similarities to the delineation of strategic orientation (Morgan & Strong, 2003), marketing orientation (Huo et al. 2014), and entrepreneurial orientation (Wales, 2016) presented in prior studies.

The results suggest that managers of LSPs identify a positive association of enhanced organizational capabilities with the firm's performance. In line with prior literature (Morgan et al., 2009; Theodosiou et al., 2012), our study offers strong support (0.49; $p < 0.01$) to the claim that organizational capabilities of network-oriented firms are positively associated with firms' performance. Access to information, coordinated exploitation of resources (Borgatti & Halgin, 2011), the multi-party mutual adaptation of network-embedded firms (Gulati et al., 2000) call for distinctive capabilities that less network-oriented, or network myopic (Czakoń & Kawa, 2018) competitors do not have.

6. Conclusions

This study adopted a business orientation stance in order to capture the behavioral inclinations of managers towards networks. The network orientation construct adds to the debate on the business orientation developmental pattern (Hakala, 2011) and a focus on opportunities embedded in networks. If identified, understood, and coupled with organizational capabilities, such managerial focus on networks can contribute to superior

performance. Hence, the network orientation does not substitute for market, entrepreneurial, or strategic orientation (Pearson, 1993), but expands the scope of managerial attention needed to identify and pursue opportunities. We contribute to the behavioral stream of management and network research by delineating and proposing the construct; and then validating its dimensions through providing evidence of nomological validity and linking it to firms' performance. This was aimed at advancing current understanding of firms' performance heterogeneity by including variables related to networks.

6.1. Theoretical contributions

This study extends the current understanding of strategy behavioral underpinnings. Recent studies indicate that managers of LSPs tend to be myopic in their network surroundings (Czakoń & Kawa, 2018), by mainly failing to perceive indirect relationships and overstating vertical relationships. The network orientation constructs nomological validity test suggest that by failing to perceive networks around a given firm accurately, managers may bring in decreased performance. Inversely, those managers who are more network-oriented are likely to achieve superior performance. Hence, we add an empirical argument to the behavioral stream of research in logistics, supporting the view that networks need to be more in focus during strategy development and implementation. Thus, we contribute to management research by providing researchers with scales helpful in measuring managers' orientation towards opportunities embedded in networks. In line with the business orientation central premise, network orientations adopted by firms can thus be compared in order to choose better performing inclinations in particular contexts.

This study broadens our understanding of business orientations in at least two ways. First, we develop the network orientation construct, by identifying four dimensions, validating their measurement scale, and providing evidence of a positive yet indirect association to the enhanced performance of logistics service providers. The structural equation modeling takes

account of measurement errors and suggests a linear relationship between variables. In short, the more a firm is oriented towards networks, the more it develops significant organizational capabilities, and the higher its performance is likely to be. We operationalize prior claims that firms differ in their capacity (Gulati et al., 2000) to identify opportunities embedded in networks. To our best knowledge, it is the first measurement scale available in the literature to capture a firm's network orientation.

Additionally, we substantiate the fundamental premise of strategic orientation research (Theodosiou et al., 2012) that the impact of a network orientation on performance passes through developing distinctive capabilities. A stronger network orientation gives firms excellent opportunities to adapt, coordinate, and create value with a limited set of relevant actors. By including indirect ties, we open ways for a more far-reaching, and fine-grained mutual adaptation within networks.

6.2. Limitations and further research

The results of the study support the need for research to focus on how to operationalize a network orientation construct; and, thus, how to better assess opportunities embedded in networks. While the results of the study offer several new insights into how network orientation is defined, several limitations impinge upon our ability to generalize across a broader scale and that we foresee as fruitful avenues for future research. For instance, the main limitation of this study was in the identification of capabilities specific to networks and network orientation. To reduce the overall complexity of the model, we drew upon the general organizational capabilities' literature in the creation of the constructs. This approach simplified a balance of effective and efficient exploitation of resources, yet we acknowledge that the contingencies relative to environmental dynamics, industry position, and technologies are likely to influence the results of the study (Lumpkin & Dess, 1993). We recommend that

further iterations of the model incorporate a more extensive range of capability variables (Mitrega et al., 2012).

Additionally, there have been debates regarding the effectiveness of utilizing a structural equation model within the network literature. The main critique is that this approach assumes linear relationships, which might not be prevalent in case of orientation towards networks, as suggested in market orientation in general (Narver & Slater, 1990), and network market orientation (Evanschitzky, 2007). While extant literature indicates that more specific orientations enhance organizational level outcomes such as innovation effectiveness (Cheng & Huizingh, 2014), further research might tackle a u-shaped relationship hypothesis. If a curvilinear association of network orientation towards performance was found, then orientation towards networks might change from a maximization issue to an optimization problem. Furthermore, we excluded the potential for possible interactions with other forms of strategic orientations (Hakala, 2011). Further research might adopt a configurational approach to look at the various combinations of orientations, wherein the network orientation might reveal to be an essential moderating or mediating variable.

Finally, the hypothesized relationship of network orientation to performance passes through organizational capabilities to further test the network orientation impact on performance across a variety of industries. However, this study remains focused on a single industry. Firms' interdependency in structured environments is challenging to both managers and researchers. Our measurement scale might contribute to the methodological advancement of the field, to accumulate empirical evidence, and to develop a unified approach to the understanding of a network-performance relationship.

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